

Remarks

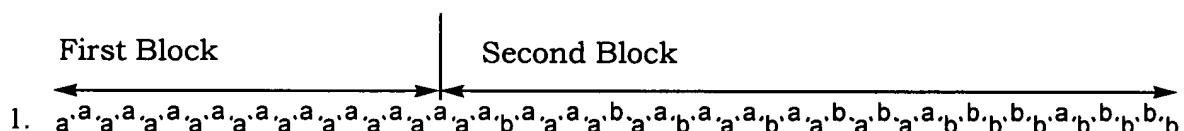
In the subject application, claims 286-319 are pending; of these, claims 286-305 and 314-317 have been withdrawn from consideration. Claims 306-313 and 318-319 are rejected in the Office Action. Claims 312-313 are rejected under 35 U.S.C. § 112, second paragraph; claim 307 is rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,891,971 issued to Keoshkerian et al. ("Keoshkerian"); and claims 306 and 308-313 are rejected under 35 U.S.C. §102(b) as being anticipated by Keoshkerian or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Keoshkerian.

Rejection under 35 U.S.C. § 112, second paragraph

Claims 312-313 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants respectfully traverse this rejection.

Claim 312 describes what has been deemed a "reverse" gradient polymer block in the specification. As described in the specification, for example on page 44, line 19 to page 46, line 31, three types of block copolymers may be formed if a second monomer is added prior to complete conversion of the first monomer or isolation of the polymer. Thus, during the polymerization of the first monomer alone, a block of first monomer is formed. After addition of the second monomer, a copolymerization with the first monomer and second monomer is initiated. During the copolymerization, both the first and second monomers are incorporated into the polymer, resulting in a polymer with a block of first monomer and a copolymer block. See Examples 1., 2., and 3., below. As described in the specification, in the above-referenced section, for

example, the copolymerization may preferentially incorporate first monomers into the second block until the concentration of free first monomers is lowered, and then the rate of incorporation of the second monomer will increase relative to the first monomer, resulting in a second block wherein the concentration of first monomer decreases the greater the distance from the first block along the polymer chain. This is Example 1., below. Example 3 is an embodiment of the subject matter of claim 312.



Example of a block copolymer having a second block synthesized from second monomers (b) and first monomers (a), wherein the concentration of the first monomer (a) in the second block decreases the greater the distance from the first block along the polymer chain.

2. $a \cdot a \cdot a \cdot a \cdot a \cdot a \cdot a \cdot a \cdot a \cdot a \cdot b \cdot a \cdot a \cdot b \cdot a \cdot b \cdot b \cdot a \cdot b \cdot b \cdot a \cdot b \cdot a \cdot b \cdot b \cdot a \cdot b \cdot a \cdot b \cdot a \cdot p \cdot a \cdot b \cdot a$

Example of a block copolymer having a second block synthesized from second monomers (b) and first monomers (a), wherein the concentration of the first monomer (a) in the second block remains relatively constant at any distance from the first block along the polymer chain.

[illegible]

Example of a block copolymer having a second block synthesized from second monomers (b) and first monomers (a), wherein the concentration of the first monomer (a) in the second block increases the greater the distance from the first block along the polymer chain.

The embodiment shown in Example 3. may be formed when the second monomer (b) is preferentially incorporated in the polymer chain over monomer (a). This should fully explain the scope of claim 312, and reconsideration of the rejection is respectfully requested.

In addition, claim 313 has been amended to clarify the subject matter of the claim, this amendment does not limit the claim as originally filed and is supported on page 46, lines 21 to 31.

Rejections Under 35 U.S.C. § 102 and 103(a)

In the Office Action, claim 307 is rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,891,971 issued to Keoshkerian et al. ("Keoshkerian"), and claims 306 and 308-313 are rejected under 35 U.S.C. §102(b) as being anticipated by Keoshkerian or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Keoshkerian. The Examiner states that Keoshkerian in Examples I and II discloses a block copolymer using the macromer of Example I which is prepared using TEMPO as a living radical initiator. The Examiner continues that because the block copolymer of Example II involves using the macromer of Example I which has a conversion of 65 percent, there is a reasonable basis that the claimed copolymers are inherently possessed in Keoshkerian. Applicants respectfully traverse the rejection.

Keoshkerian states that "*block and multiblock copolymers can be synthesized by the aforementioned stable free radical moderated polymerization processes wherein each block formed is well defined in length by the added and reacted monomer and wherein each additional block that is formed also possesses a narrow molecular weight distribution.*" See column 3, lines 25 to 31, *emphasis added*. Applicants respectfully request that Examples I and II of Keoshkerian are combined to produce a block copolymer with well-defined

blocks. The first macromer for Example 1. is isolated prior to reacting with the monomer of Example II. This is evident by the disclosure of Example II.

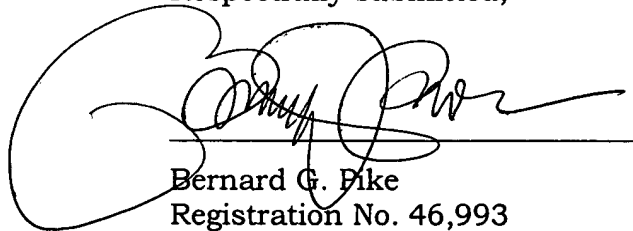
Example II states that the “poly(n-butyl acrylate)-TEMPO (2.2 grams) of Example I was *dissolved* in styrene monomer (35 mL).” This indicates that the polymer, poly(n-butyl acrylate)-TEMPO was a solid isolated from the reaction medium and any remaining n-butyl acrylate of Example I. Thus, the “resulting polymer of poly(n-butyl acrylate-b-styrene)” is formed where each block is *well defined in reacted monomer*. This is consistent with the written description of the invention as indicated above. Keoshkerian does not anticipate or suggest a block copolymer that is not well defined in reacted monomer as claimed in the subject application.

The inventors of the subject application were the first to prepare a block copolymer produced by a process comprising polymerizing a plurality of first monomers into a polymer chain, polymerizing a second monomer into the polymer chain, wherein a second monomer is polymerized while some of the first monomer remains unpolymerized, wherein adding and polymerizing a second free radically (co)polymerizable monomer is conducted after 50% of the first monomer is polymerized. This invention allows the preparation of many novel polymers tailored to specific applications as described in the subject application.

Conclusion

Applicants have made a diligent effort to fully respond to all the rejections and comments presented by the Examiner in the Office Action. Therefore, Applicants respectfully request that a timely Notice of Allowance be issued in the subject application. If the Examiner has any additional concerns regarding Applicants' present response, he is invited to contact Applicants' undersigned representative at the telephone number listed below so that those concerns may be expeditiously addressed.

Respectfully submitted,

A large, stylized handwritten signature in black ink, appearing to read 'Bernard G. Pike', is written over a horizontal line.

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